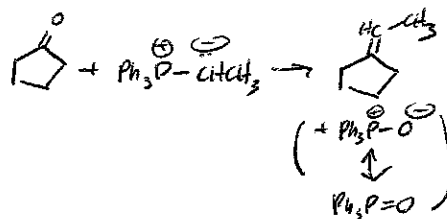
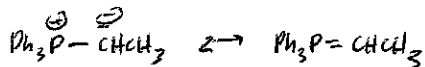


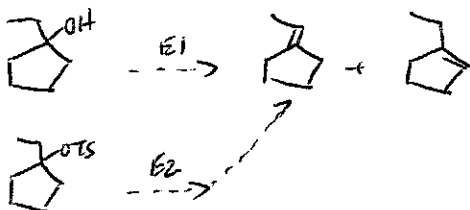
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PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.

RECALL: WITTING REACTION - REGIOSELECTIVE

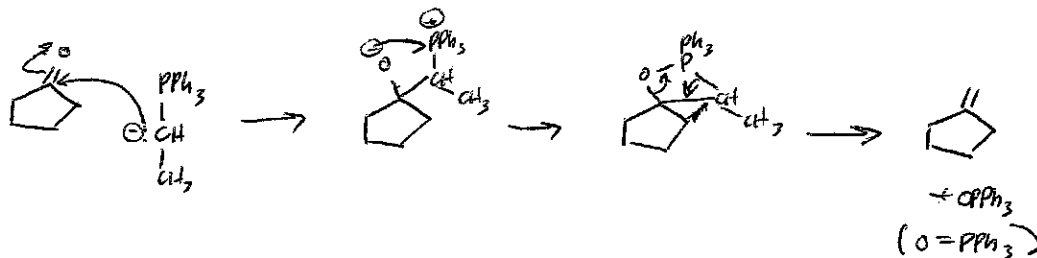
- ALKENE SYNTHESIS. KEY REAGENT = PHOSPHOROUS YLID



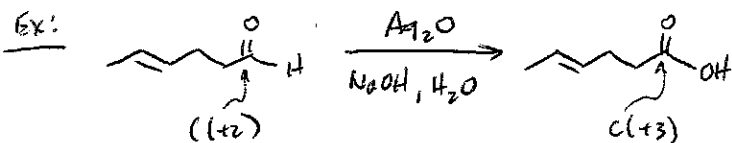
CONTRAST:



MECHANISM:



Oxidation of ALDEHYDES TO CARBOXYLIC ACIDS



Ag_2O - MILD AND CHEMOSELECTIVE
 COULD ALSO USE KMnO_4 FOR
 ALDEHYDE \rightarrow CARBOXYLIC ACID,
 BUT KMnO_4 WOULD ALSO REACT
 WITH ALKENE

END CHAPTER 19 - END MATERIAL FOR EXAM #2

Course CHEM 345 Instructor GEUMAN
Day WEDNESDAY Date 3/12/14
Notes Taken By EMOT Total # of Pages 4

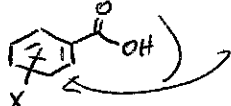
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CHAP. 20 - CARBOXYLIC ACIDS

REC. PROBLEMS - 3-6, 9-27, 29, 30, 32, 35-38, 39c, 40, 41, 43-51, 53, 54, 55a,b

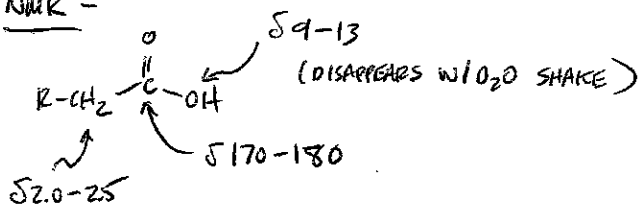
SPECTROSCOPY

IR -

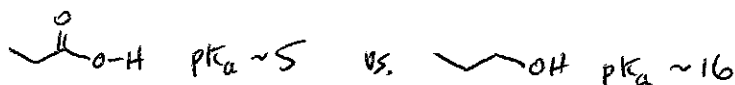
C=O $\sim 1710 \text{ cm}^{-1}$ (LOWER FOR  ANY SUBSTITUTED BENZENE RING)

O-H - VERY STRONG + BROAD, $2400-3600 \text{ cm}^{-1}$

NMR -

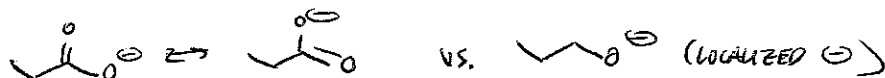


ACID-BASE PROPERTIES

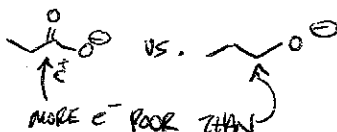


2 FACTORS TO EXPLAIN THIS DIFFERENCE

1) DELOCALIZATION OF CHARGE IN CARBOXYLATE

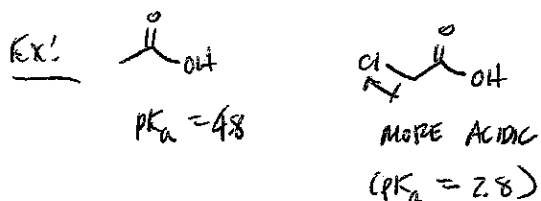


2) INDUCTIVE EFFECT (THRU σ -BONDS)



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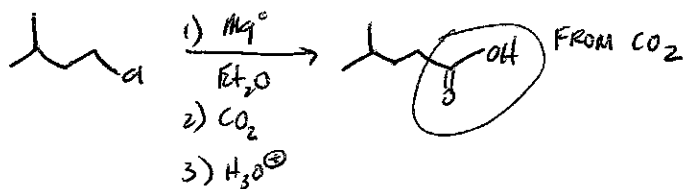
QUANTITATIVE PREDICTIONS POSSIBLE FOR SUBSTITUENT EFFECTS ON pK_a



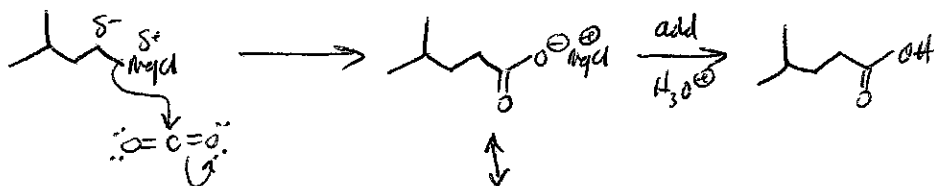
SYNTHESIS OF CARBOXYLIC ACIDS

→ SEE TEXT SUMMARY [FLASHCARDS!]

- 1) OXIDATION OF 1° ALCOHOLS OR ALDEHYDES
 - 2) ALKYL BENZENE OXIDATIONS
 - 3) (NEW) GRIGNARD REAGENT + CO_2
- } DISCUSSED PREVIOUSLY

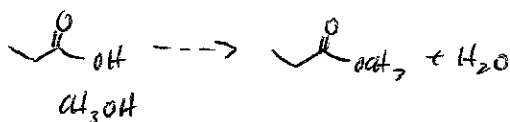


KEY MECHANISTIC STEPS



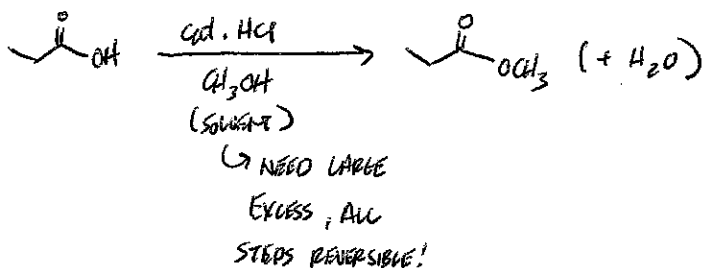
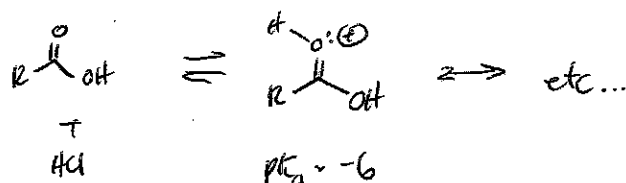
REACTIONS OF CARBOXYLIC ACIDS

- 1) ACID-CATALYZED ESTER FORMATION



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PRELUDE: CARBOXYLIC ACIDS CAN FUNCTION AS BASES (BUT WEAK)



NOTE: REQUIREMENT FOR EXCESS ALCOHOL (+ MECHANISM) LIMIT SCOPE - MOST COMMON FOR SIMPLE ALCOHOLS
 $(\text{CH}_3\text{OH} + \text{CH}_3\text{CH}_2\text{OH})$

NOTE: ALL STEPS ARE REVERSIBLE!

